

WHAT IS CLAIMED IS:

1. A method of etching an organic film,
comprising the steps of:

forming an intermediate layer and a patterned
5 resist layer on an organic film;

etching the intermediate layer exposed from the
resist layer; and

then etching the organic film using a plasma of a
gas,

10 wherein the intermediate layer comprises a layer
comprised of a metal or metal compound.

2. The method according to claim 1, wherein the
metal is aluminium, copper, titanium, cobalt, tantalum,
15 platinum, chromium or tungsten.

3. The method according to claim 1, wherein the
metal compound is titanium nitride, tungsten nitride or
tantalum nitride.

20 4. The method according to claim 1, wherein the
gas is N_2 , H_2 , a mixed gas of N_2 and H_2 , NH_3 or N_2H_4 .

5. The method according to claim 1, wherein the
25 plasma is a surface-wave interfered plasma.

6. The method according to claim 1, wherein the

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organic film is a polyaryl ether or fluorinated polyaryl ether.

7. The method according to claim 1, wherein the
5 organic film comprises a low-dielectric-constant material having a lower dielectric constant than silicon oxide.

8. The method according to claim 1, wherein the
10 organic film comprises a low-dielectric-constant material having a lower dielectric constant than silicon oxide, and the gas is a gas containing at least one of nitrogen and hydrogen.

9. The method according to claim 1, wherein the
15 intermediate layer comprises an inorganic insulating layer in contact with the organic film.

10. A method of etching an organic film,
20 comprising the steps of:

forming an intermediate layer and a patterned resist layer on an organic low-dielectric-constant film;

etching the intermediate layer exposed from the
25 resist layer; and

then etching the organic low-dielectric-constant film using a plasma of a gas containing either of

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nitrogen and hydrogen,

wherein the intermediate layer comprises a layer comprised of a metal or metal nitride.

5 11. A method of producing an element, comprising the steps of:

forming an organic insulating film, an intermediate layer and a patterned resist layer on a substrate;

10 etching the intermediate layer exposed from the resist layer, and then etching the organic insulating film using a plasma of a gas; and

filling with a conductor a portion where the organic insulating film is etched away,

15 wherein the intermediate layer comprises a layer comprised of a metal or metal compound.

20 12. The method according to claim 11, further comprising, after the filling with the conductor, the step of removing the layer comprised of the metal or metal compound.

25 13. The method according to claim 11, wherein the metal is aluminium, copper, titanium, cobalt, tantalum, platinum, chromium or tungsten.

14. The method according to claim 11, wherein the

metal compound is titanium nitride, tungsten nitride or tantalum nitride.

15 15. The method according to claim 11, wherein the gas is N_2 , H_2 , a mixed gas of N_2 and H_2 , NH_3 or N_2H_4 .

16. The method according to claim 11, wherein the plasma is a surface-wave interfered plasma.

10 17. The method according to claim 11, wherein the organic insulating film is a polyaryl ether or fluorinated polyaryl ether.

15 18. The method according to claim 11, wherein the organic insulating film comprises a low-dielectric-constant material having a lower dielectric constant than silicon oxide.

20 19. The method according to claim 11, wherein the organic insulating film comprises a low-dielectric-constant material having a lower dielectric constant than silicon oxide, and the gas is a gas containing at least one of nitrogen and hydrogen.

25 20. The method according to claim 11, wherein the intermediate layer comprises an inorganic insulating layer in contact with the organic insulating film.